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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/559,870
Filing Date: December 07, 2005
Appellant(s): TAKEUCHI, TAKETO

James A. Oliff
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/23/2008 appealing from the Office action mailed 04/10/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,114,828	Matsunaga et al	9-2000
20020116100	Shimazaki et al	8-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga et al (US 6114828) in view of Shimazaki et al (US20020116100)

Claims 1,9: Matsunaga et al teach a temperature sensor (6) that detects a temperature of junctions (T1-T6) supplying currents to phases (U, V, W) of a motor (5; col. 3:43-59, col. 7:25-30); a controller (12) that controls a torque (col. 7:8-15), detects a stalled state (col. 4:8-21), detects a phase angle the motor (10; col. 3:60-67) and selects a temperature detected by the temperature sensor based on the detected current (col. 4:32-37; col. 6:45-55); wherein the torque of the motor is reduced when the stalled state is detected (col. 4:21-32) and the temperature exceeds a threshold (col. 6:49-55), a temperature is from a coil (col. 6:45-55, particular switch device with respect to motor, 7:8-15), detecting a maximum current flow (col. 4:58-5:5), the maximum current flow being detected based on the detected current phase angle (col. 4:21-32, 7:25-35). Matsunaga et al do not explicitly recite that the selected temperature is from a coil where a maximum current flow is detected. Shimazaki et al teach an excessive temperature is from a coil where a maximum current flow is detected (par. 0015-0016).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Matsunaga et al to select a temperature

from a coil where a maximum current flow is detected as taught by Shimazaki et al, in order to prevent damage to the motor and switches.

Claims 2, 5, 10, and 13: Matsunaga et al teach the controller selects a phase when a temperature is within a range where a maximum current flows in the phase (col. 4:4:62-5:5; 5:59-6:5).

Claims 3, 4, 11, and 12: Matsunaga et al teach the phase angle is based on the rotational angle of the motor (col. 3:60-63).

Claims 6, 7, 14, 15: Matsunaga et al teach the controller reduces the torque until the temperature exceeds the limit (col. 4:62-5:5).

Claim 8, 16: Matsunaga et al teach when the stall occurs outside a predetermined range of a phase, a phase having the maximum temperature is selected (col. 4:9-36).

(10) Response to Argument

In response to appellants' argument that,

"the combination of Matsunaga and Shimazaki, when combined, fails to disclose or suggest each and every feature recited in independent claims 1 and 9. In summary, Matsunaga reduces torque if the motor does not rotate (that is, if the phase domain is the same) (col. 6, lines 22-54 and Fig. 2B, steps S33 and S37) and Shimazaki simply states that the drive current of the motor is reduced if the stalled state is determined based on the accelerator opening and the rotational speed of the motor",

appellant is arguing against the references individually, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Also, appellant's claim language does not preclude or teach against "reduces torque if the motor does not rotate (that is, if the phase domain is the same)". Matsunaga et al teach a controller (12) that detects a stalled state,

as in, determining when the motor falls in a "locked state" if the torque demand instruction is larger than the predetermined torque value (see col. 4:62-66). Appellant's claim language reads "detects a stalled state of a vehicle" and does not further limit the claim as to how the stall state is detected. Therefore there is nothing in appellants' claim language that precludes the examiner from reading Matsunaga et al as meeting the claimed limitation. Although the examiner did not rely on Shimazaki et al as teaching "detecting a stalled state of the vehicle motor", Shimazaki et al still teach this limitation as in having lock state judgment means to judge that the motor is in a locked state (see abstract). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Matsunaga et al with Shimazaki et al in order to prevent damage to the motor.

In response to appellant's argument that

"Matsunaga fails to disclose all of the features of claims 1 and 9 because Matsunaga reduces torque if the motor does not rotate. At step S31 of Fig. 2B, the controller 12 determines whether the present phase domain is the same (col. 6, lines 22-26). If the phase domain is the same, the output torque of the motor 5 is reduced by subtracting a displacement torque from a limitation torque (col. 6, lines 27-54 and Fig. 2B, steps S33 and S37) in order to avoid overheating. If the phase domain is not the same, then the output torque remains the same (col. 6, lines 55-59 and Fig. 2B, step 35). Matsunaga thus fails to disclose reducing the torque of the vehicle motor when a selected temperature exceeds a restrictive temperature as called for by claims 1 and 9, but instead reduces torque if the phase domain remains the same";

the examiner respectfully disagrees. Appellant's claim language does not preclude or teach against "reduces torque if the motor does not rotate (that is, if the phase domain is the same)" as recited in appellant's arguments. Matsunaga et al teach a controller (12) that detects a stalled state, as in, determining when the motor falls in a "locked state" (stalled state) if the

torque demand instruction is larger than the predetermined torque value (see col. 4:62-66, col. 2:19-23). Matsunaga et al also teach a torque reducer for outputting a command to the motor driver when a locked/stalled state is determined (col. 2:28-33). The torque of the motor is reduced when the locked/stalled state is detected and when an excessive current is detected (col. 4:21-36). Matsunaga et al further teach that the torque is reduced when there is an overheated condition. The locked state (stalled state) causes an overheated state (col. 6:49-52). An "overheated state" broadly, yet reasonably reads on appellant's limitation "exceeds a restrictive temperature", as in, heat refers to temperature and for there to be an overheated state, there must be a threshold heat/temperature or base heat/temperature, in that, if the temperature exceeds the threshold/base temperature there would be an "overtemperature" or "overheated" state. Since the overheated state is caused by the locked state, then when the torque is reduced when the motor is locked, the torque is reduced also for the overheated state. Therefore Matsunaga et al teach that the torque of the vehicle motor is reduced when a stalled/locked state is detected and when a selected temperature exceeds a restrictive temperature (overheated state). Appellant's claim language reads "detects a stalled state of a vehicle" and does not further limit the claim as to how the "stalled state" is detected. Appellant's claim language does not preclude or teach against the manner in which Matsunaga et al detects a locked/stalled state. Therefore there is nothing in appellants' claim language that precludes the examiner from reading Matsunaga et al as meeting the claimed limitations.

In response to appellants' argument that,

"Page 3 of the Office Action mailed April 10, 2008 ("Office Action") asserts that "Matsunaga discloses that the motor is stopped because it is in a locked state (Col. 2:8-33, col. 4:8-21) due to overheating (col. 6:49-55)." Appellant asserts that this assertion is not on point with Appellant's argument and reflects a misunderstanding of Matsunaga. Matsunaga's col. 4, line 50 - col. 5, line 5 discusses how a

locked state of the motor 5 is determined. Matsunaga fails to state that the motor is stopped because it is in a locked state due to overheating. Matsunaga instead attempts to avoid overheating (col. 6, lines 49-55 discusses the advantage of Matsunaga's invention)",

Appellant's claim language reads "detects a stalled state of a vehicle" and does not further limit the claim as to how the "stalled state" is detected. Appellant's claim language does further limit the claim language as to how a "stalled state" is detected. Also, appellant's claim language does not teach Matsunaga et al detects a locked/stalled state. The torque of the motor is reduced when the locked/stalled state is detected and when an excessive current is detected (col. 4:21-36). The torque is reduced when there is an overheated condition. The locked state (stalled state) causes an "overheated state" (col. 6:49-52). An "overheated state" broadly, yet reasonably interpreted, reads on appellant's limitation "exceeds a restrictive temperature", as in, "heat" refers to "temperature" and for there to be an overheated state, there must be an overtemperature state (threshold heat/temperature or base heat/temperature), in that, if the temperature exceeds the threshold/base temperature there would be an "overtemperature" or "overheated" state. Since the overheated state is caused by the locked state, then when the torque is reduced when the motor is locked, the torque is reduced also for the overheated state. Therefore Matsunaga et al teach that the torque of the vehicle motor is reduced when a stalled/locked state is detected and when a selected temperature exceeds a restrictive temperature (overheated state).

In response to appellant's argument that,

"As previously discussed, Matsunaga determines if the phase domain is the same in order to determine whether the output torque of the motor 5 should be reduced in order to avoid_ overheating (col. 6, lines 27-59)",

once again, the examiner asserts that appellants' claim language does not recite or further limit the claim as to how a locked/stalled state is determined.

In response to appellant's argument that,

"Matsunaga fails to disclose or suggest reducing the torque of the vehicle motor when a selected temperature exceeds a restrictive temperature as called for by claims 1 and 9",

the examiner respectfully disagrees. Matsunaga et al teach the torque is reduced when there is an overheated condition. The locked state (stalled state) causes an "overheated state" (col. 6:49-52). An "overheated state" broadly, yet reasonably interpreted, reads on appellant's limitation "exceeds a restrictive temperature", as in, "heat" refers to "temperature" and for the there to be an overheated state, there must be an overtemperature state (threshold heat/temperature or base heat/temperature), in that, if the temperature exceeds the threshold/base temperature there would be an "overtemperature" or "overheated" state. Since the overheated state is caused by the locked state, then when the torque is reduced when the motor is locked, the torque is reduced also for the overheated state. Therefore Matsunaga et al teach that the torque of the vehicle motor is reduced when a stalled/locked state is detected and when a selected temperature exceeds a restrictive temperature (overheated state).

In response to appellant's argument that,

"As clearly illustrated by Matsunaga's Fig. 2B, Matsunaga reduces the output torque (S33 and S37) only if the limitation torque is less than the motor torque demand instruction value (S29:YES) and the phase domain is the same (S31 :Yes). Matsunaga fails to consider determining if a selected temperature exceeds a restrictive temperature as called for by claims 1 and 9",

Matsunaga et al teach the torque is reduced when there is an overheated condition. The locked state (stalled state) causes an "overheated state" (col. 6:49-52). An "overheated state" broadly, yet reasonably interpreted, reads on appellant's limitation "exceeds a restrictive temperature", as in, "heat" refers to "temperature" and for the there to be an overheated state,

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there must be an overtemperature state (threshold heat/temperature or base heat/temperature), in that, if the temperature exceeds the threshold/base temperature there would be an "overtemperature" or "overheated" state. Since the overheated state is caused by the locked state, then when the torque is reduced when the motor is locked, the torque is reduced also for the overheated state. Therefore Matsunaga et al teach that the torque of the vehicle motor is reduced when a stalled/locked state is detected and when a selected temperature exceeds a restrictive temperature (overheated state).

In response to appellants' argument that,

"Page 2 of the Office Action admits that Matsunaga fails to disclose selecting a temperature from a coil of the plurality of coils where a maximum current flow is detected as called for by claims 1 and 9"

appellant is arguing against the references individually, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner indicated that Matsunaga et al did not explicitly recite that the selected temperature is from a coil of the plurality of coils where a maximum current flow is detected. The examiner then relied on Shimazaki et al as meeting this limitation (see par. 0015-0016). The motivation for combining the references would to prevent damage to the motor.

In response to appellants' argument that,

"Matsunaga also fails to disclose reducing the torque of the motor vehicle when a selected temperature exceeds a restrictive temperature as called for by claims 1 and 9. Page 2 of the Office Action identifies Matsunaga's col. 6, lines 49-55 as disclosing this feature. However, Matsunaga's col. 6, lines 49-55 simply discusses the advantages that can be achieved by their invention (i.e., overheating) by

changing phase domains if it is determined that a particular phase domain remains the same. Matsunaga fails to discuss a selected temperature or a restrictive temperature, and obviously fails to discuss comparing the temperatures to determine if torque should be reduced",

the examiner respectfully disagrees. Matsunaga et al teach the torque is reduced when there is an overheated condition. The locked state (stalled state) causes an "overheated state" (col. 6:49-52). An "overheated state" broadly, yet reasonably interpreted, reads on appellant's limitation "exceeds a restrictive temperature", as in, "heat" refers to "temperature" and for the there to be an overheated state, there must be an overtemperature state (threshold heat/temperature or base heat/temperature), in that, if the temperature exceeds the threshold/base temperature there would be an "overtemperature" or "overheated" state. Since the overheated state is caused by the locked state, then when the torque is reduced when the motor is locked, the torque is reduced also for the overheated state. Therefore Matsunaga et al teach that the torque of the vehicle motor is reduced when a stalled/locked state is detected and when a selected temperature exceeds a restrictive temperature (overheated state).

In response to appellant's argument that,

"Shimazaki fails to overcome the deficiencies of Matsunaga because Shimazaki also fails to disclose reducing torque using a selected temperature",

appellant is arguing against the references individually, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner did not rely on Shimazaki et al as teaching reducing torque using a selected temperature. Shimazaki et al was relied upon as teaching an excessive temperature is from a coil where a maximum current flow is detected.

In response to appellants' argument that,

"Shimazaki states that the stalled state is determined based on the accelerator opening and the rotational speed of the motor. After the stalled state is determined, Shimazaki simply states that the drive current of the motor is reduced",

appellant is arguing against the references individually, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner did not rely on Shimazaki et al as teaching the limitation. Although the examiner did not rely on Shimazaki et al as teaching "detecting a stalled state of the vehicle motor", Shimazaki et al still teach this limitation as in having lock state judgment means to judge that the motor is in a locked state (see abstract).

In response to appellants' argument that,

"Shimazaki also fails to disclose or suggest reducing torque using temperature or when a selected temperature exceeds a restrictive temperature as called for by claims 1 and 9. Appellant made this argument in a previous reply, and pages 3 and 4 of the Office Action asserted that "it is noted that the features upon which applicant relies (i.e., the motor is rotating) are not recited in the rejected claim(s)." Appellant asserts that the previous argument asserted has been misinterpreted. As previously argued, Shimazaki fails to disclose reducing torque using a selected temperature, as called for by claims 1 and 9, because Shimazaki states that the stalled state is determined (in order to determine whether the drive current of the motor should be reduced) based on the accelerator opening and the rotational speed of the motor. In other words, Shimazaki fails to disclose all of the features of claims 1 and 9 because Shimazaki discloses using another parameter (i.e., rotational speed)"

appellant is arguing against the references individually, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner did not rely on Shimazaki et al as teaching the limitation "reducing torque using temperature or when a selected temperature exceeds a restrictive temperature". The examiner recited Matsunaga et al as teaching the limitation (see col. 4:8-32, 6:49-52).

In response to appellant's argument that,

"Therefore, neither reference discloses using a selected temperature as called for by claims 1 and 9. Taken as a whole, if Matsunaga were to be combined with Shimazaki (which Appellant does not admit would have been obvious), then the torque of the motor would be reduced when the motor does not rotate (as discussed by Matsunaga) and/or based on the accelerator opening and the rotational speed (as discussed by Shimazaki). Therefore, taken as a whole, Matsunaga and Shimazaki when combined fail to disclose or suggest using the parameter of a selected temperature that exceeds a restrictive temperature in order to reduce the torque of the vehicle motor as called for by claims 1 and 9. As a result, a claimed feature and function is missing even after the references are combined, and such feature and function in claims 1 and 9 would not otherwise have been known or obvious";

the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Matsunaga et al teach a controller (12) that detects a stalled state, as in, determining when the motor falls in a "locked state" if the torque demand instruction is larger

than the predetermined torque value (see col. 4:62-66). Appellant's claim language reads "detects a stalled state of a vehicle" and does not further limit the claim as to how the stall state is detected. Therefore there is nothing in appellants' claim language that precludes the examiner from reading Matsunaga et al as meeting the claimed limitation. Although the examiner did not rely on Shimazaki et al as teaching "detecting a stalled state of the vehicle motor", Shimazaki et al still teach this limitation as in having lock state judgment means to judge that the motor is in a locked state (see abstract). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Matsunaga et al with Shimazaki et al in order to prevent damage to the motor.

In response to appellants' argument that,

"Appellant notes that Shimazaki fails to explicitly disclose this feature at the cited paragraphs [0015] and [0016]. In addition, even if Shimazaki disclosed this feature (which Appellant does not agree), Shimazaki suffers the same deficiency as Matsunaga in that Shimazaki also fails to determine if a selected temperature exceeds a restrictive temperature in order to determine if the torque of the vehicle motor is to be reduced. As discussed above, Shimazaki states that the stalled state is determined (in order to determine whether the drive current of the motor should be reduced) based on the accelerator opening and the rotational speed of the motor. Furthermore, Shimazaki cannot select a temperature from a coil of the plurality of coils where a maximum current flow is detected, as called for by claims 1 and 9",

appellant is arguing against the references individually, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner did not rely on

Shimazaki et al as teaching the limitation. Matsunaga et al was recited as meeting the claimed limitation.

In response to appellant's argument that,

"Shimazaki, a temperature sensor is provided only in one phase armature coil (paragraph [0017], lines 2 and 3). As a result, Shimazaki cannot select a temperature from a coil of a plurality of coils"

appellant is arguing against the references individually, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner did not rely on Shimazaki et al as teaching the limitation. Matsunaga et al was recited as meeting the claimed limitation "selects one detected temperature detected the temperature sensor which is based on a detected current phase angle (col. 3:60-67)....detecting a maximum current flow (col. 4:58-5:5), the selected temperature is from a coil of the plurality of coils (col. 4:21-32, 7:25-35). Matsunaga et al does not explicitly recite that the selected temperature is from a coil where a maximum current flow is detected. Shimazaki et al teach an excessive temperature is from a coil where a maximum current flow is detected. A temperature sensor is provided that detects the temperature of the armature coils and detects an abnormal rise in the temperature of the coils. The abnormal temperature caused and the motor to be in an overloaded state and stop operating (par. 0015-0019, 0029, 0036). The examiner relied on Shimazaki et al as teaching a maximum current and not necessarily for teaching "selecting".

In response to appellants' argument that,

"Appellant provides the following explanation in order to clarify maximum temperature and maximum current in order to explain why Shimazaki fails to suggest selecting a temperature from a coil of

the plurality of coils where a maximum current flow is detected, as called for by claims 1 and 9. Decidedly, a maximum temperature becomes the temperature of a phase where a maximum current flows in a steady state. However, the current flows intensively into a phase when in the stalled state. As a result, the phase where a maximum current flows should move to a new phase at that moment when the current phase reaches a maximum temperature in order to avoid limiting the torque of the motor. The temperature of the new phase where the maximum current now flows has not become a maximum temperature yet (the previous phase is the phase that is at a higher temperature). Therefore, the phase of maximum temperature definitely differs from the phase where maximum current flows based on the change of the phase, which flows the current in a transient state",

Shimazaki et al teach an excessive temperature is from a coil where a maximum current flow is detected. A temperature sensor is provided that detects the temperature of the armature coils and detects an abnormal rise in the temperature of the coils. The abnormal temperature caused and the motor to be in an overloaded state and stop operating (par. 0013-0020). The examiner relied on Shimazaki et al as teaching t a maximum current and not necessarily for teaching "selecting". Also, Shimazaki et al teaches that it is well known in the art that when the load is excessive the motor is overloaded and goes into a locked/ stalled state (par. 0018). The overload occurs when a large drive current flows through a specific coil, which causes the temperature to of the coil to abruptly rise (par. 0020); therefore the temperature is from a coil where a maximum current is detected.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Art Unit: 2837

/Renata McCloud/

Examiner, Art Unit 2837

Conferees:

/Walter Benson/

Supervisory Patent Examiner, Art Unit 2837

/T C Patel/

Supervisory Patent Examiner, Art Unit 2839